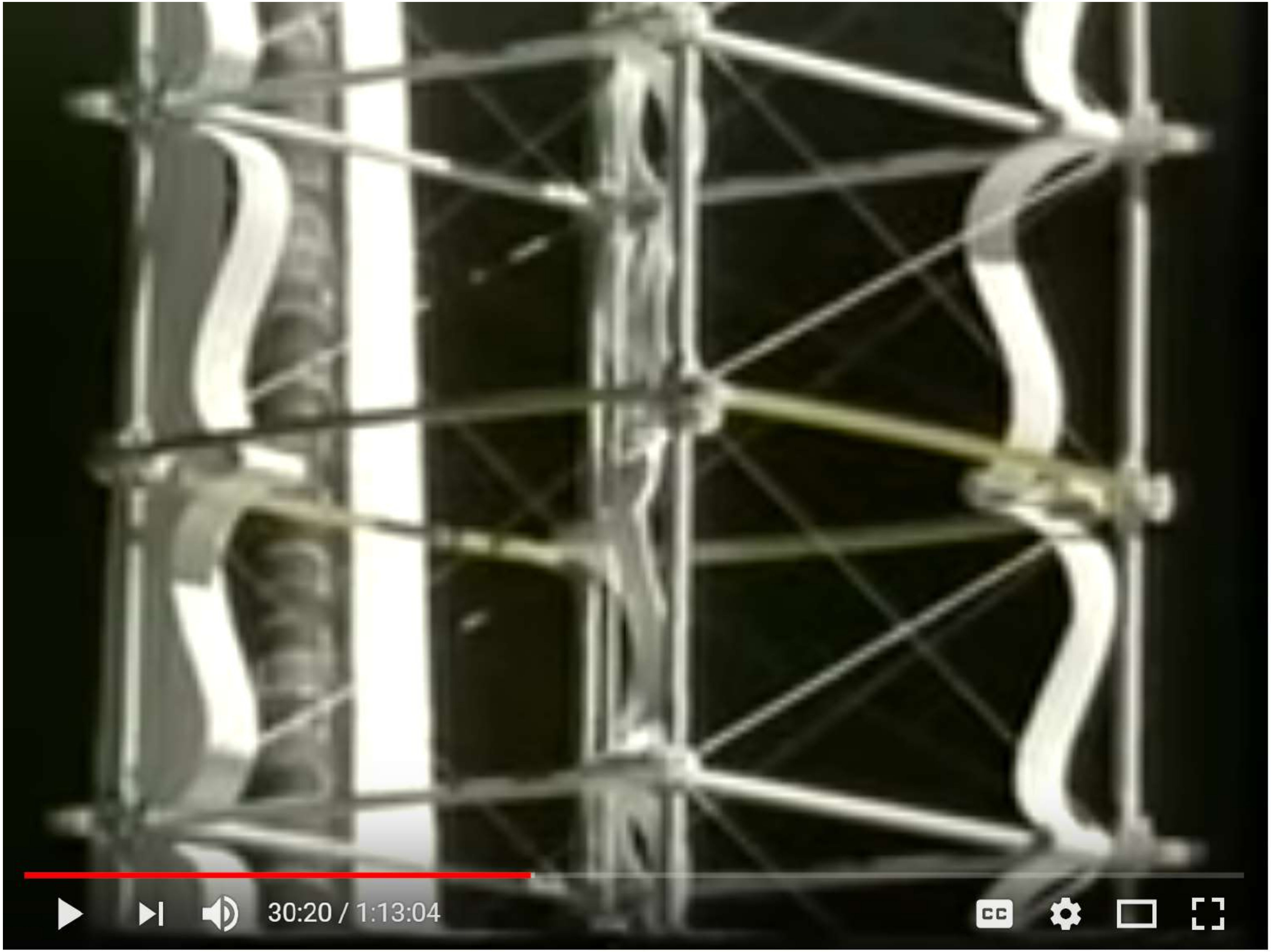
David Sereda Analysis of NASA UFO.flv


30:20 / 1:13:04


30:25 / 1:13:04
CC


DAY:056
30:47 / 1:13:04
CC

12 MILE ELECTRODYNAMIC TETHER

TETHER SNAPS FROM OVERCHARGE OF FREE ENERGY / SURROUNDED BY UFO'S

IONOSPHERE


33:29 / 1:13:04

UFO'S 3 MILES WIDE

Lake Maracaibo, Venezuela lightning capital of the world


2016-01-21 09:43:44
Parking - Back lot [SW]
1:29 / 5:45
HD


hyperhead
3:09 / 6:48
HD
hyper head

dropa stones
The Mysterious 12,000-Year-
Ancient Code
The mysterious Dropa Discs.
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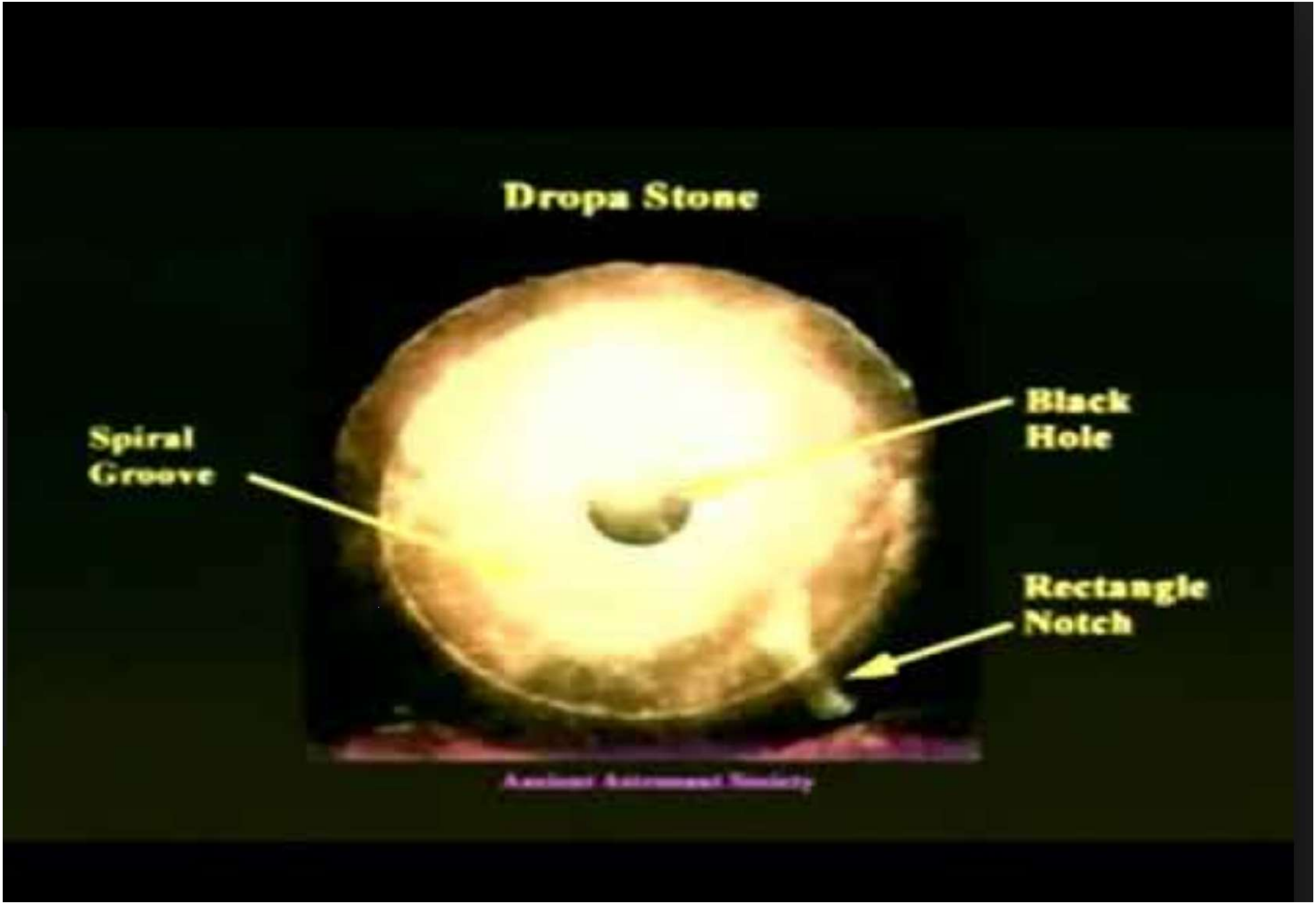
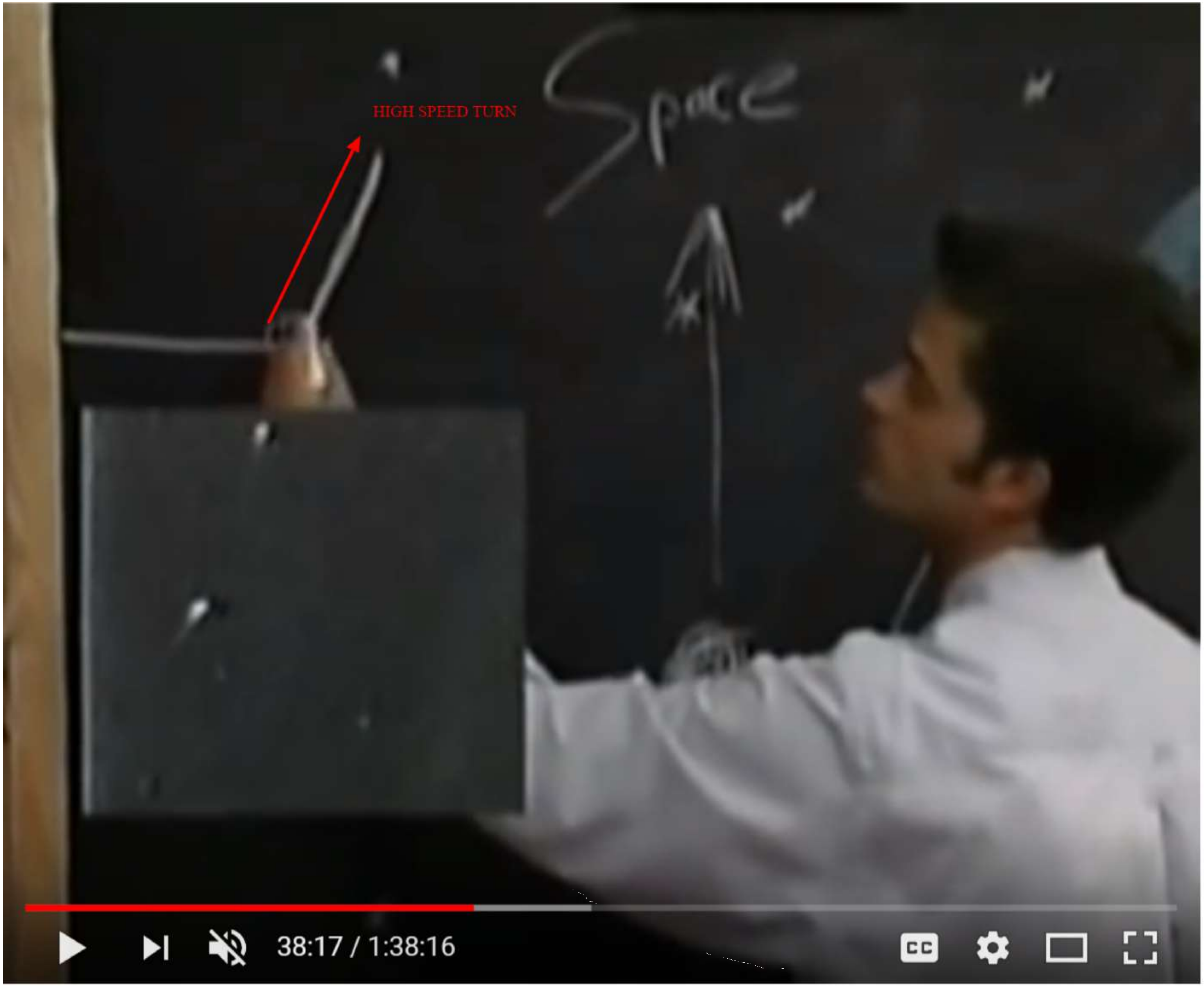


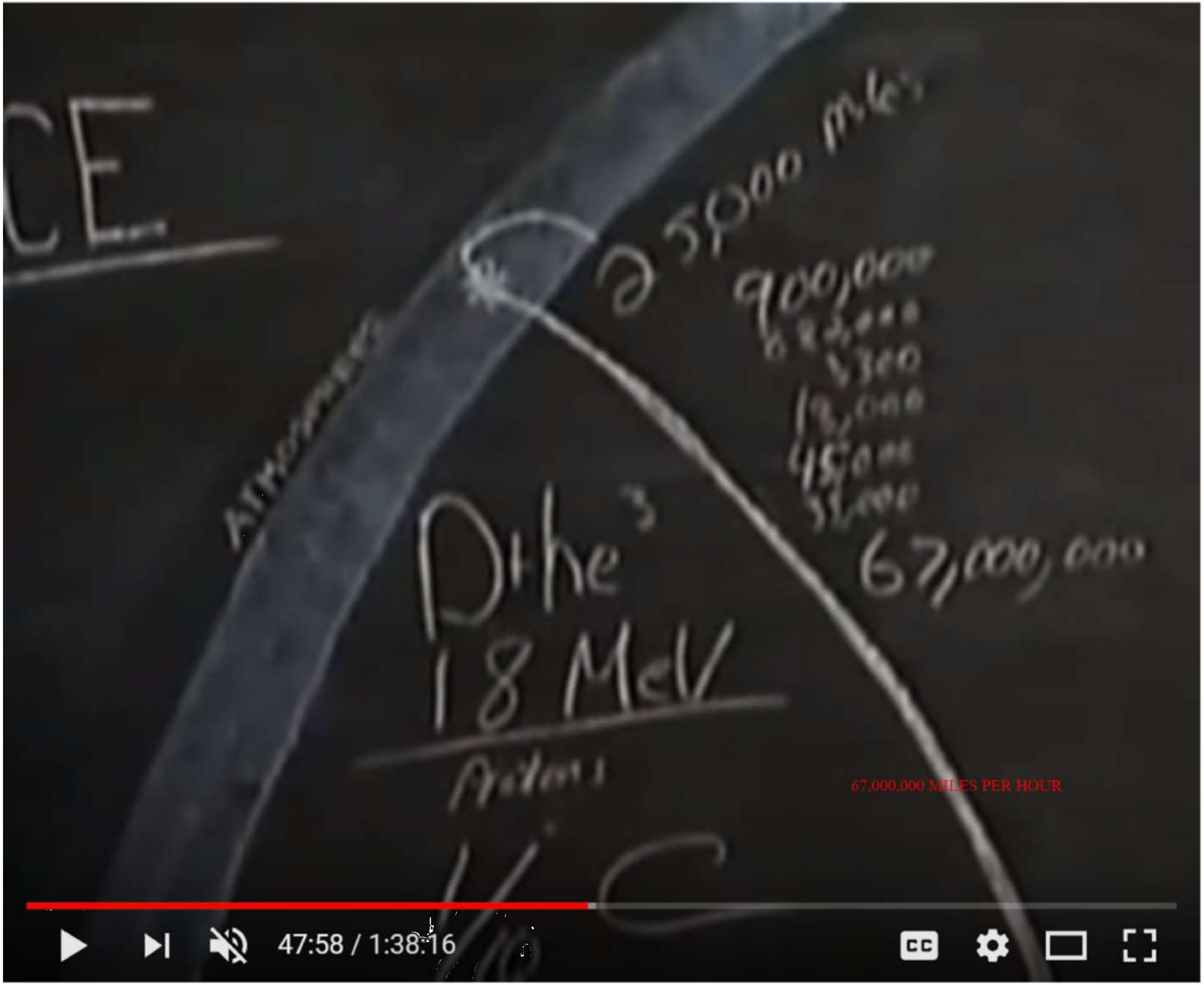
Dropa Stone
Spiral
Groove
Black
Hole
Rectangle
Notch


4:50 / 1:38:16
CC

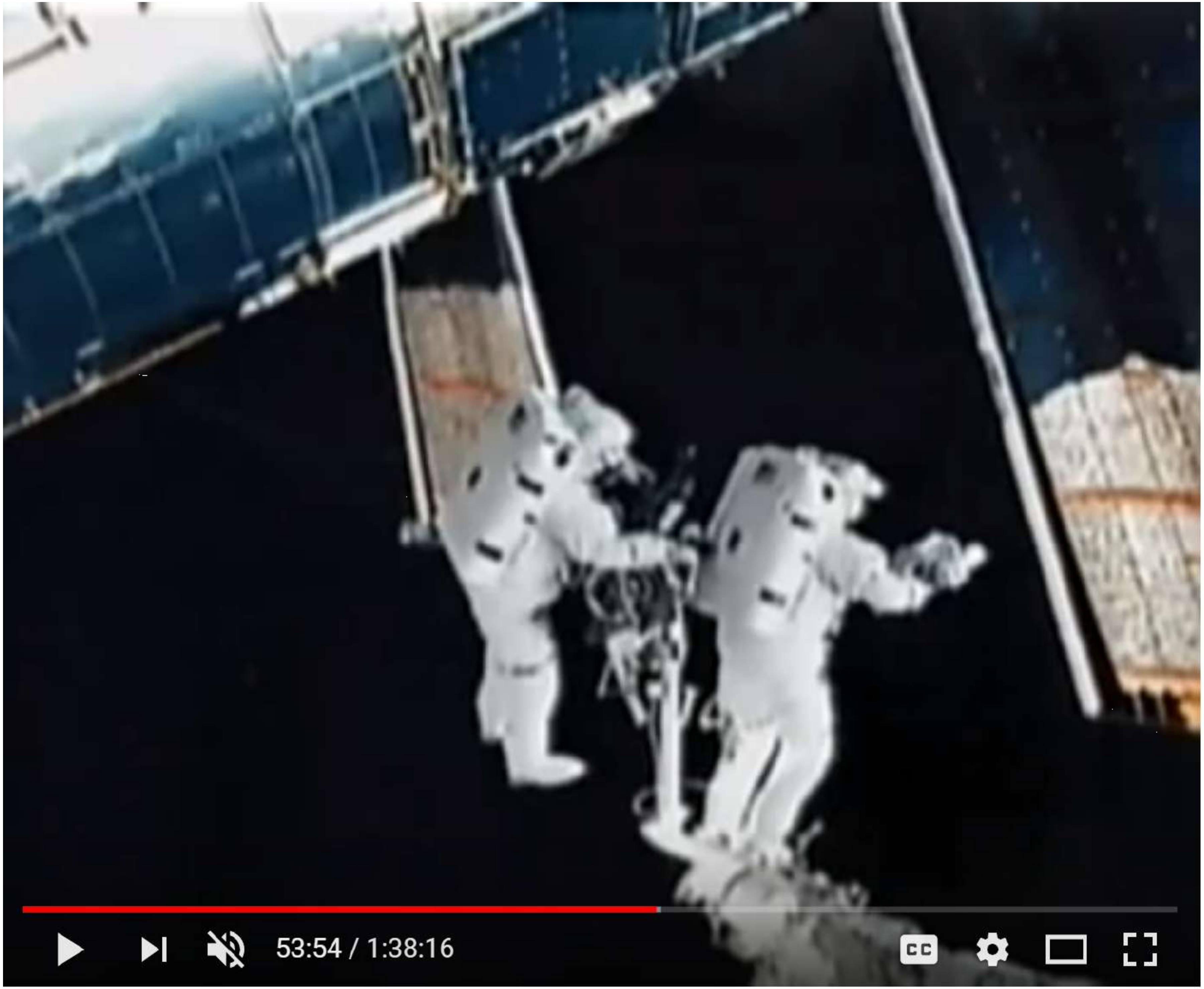

35:35 / 1:38:16


Space
38:12 / 1:38:16


HIGH SPEED TURN
Space
38:17 / 1:38:16



25,000 miles
900,000
67,000,000
D+he3
18 MeV
67.000.000 MILES PER HOUR
47:58 / 1:38:16


53:54 / 1:38:16


1:33:54 / 1:38:16

Electrodynamic Tethers - What are they?

-A long conducting wire extends from a satellite

-Electrons are collected from the atmosphere

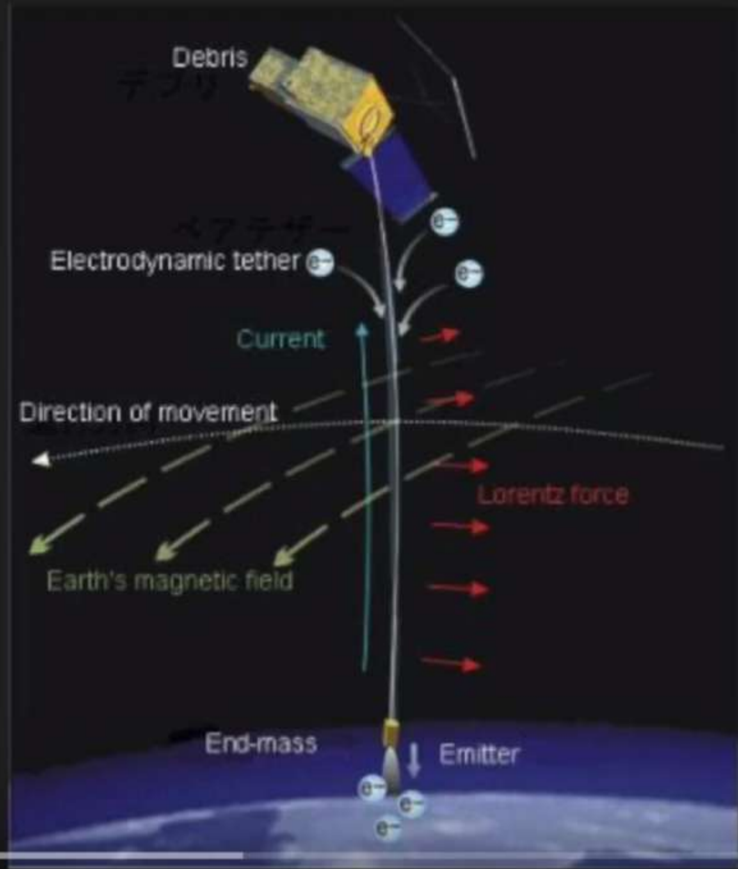
-Electrons are forced down through the wire

-Electrons are expelled at the Emitter

-An Electric Potential is generated across the tether

-Earth's magnetic field exerts a force on the wire

and any payload attached to it



0:17 / 2:46

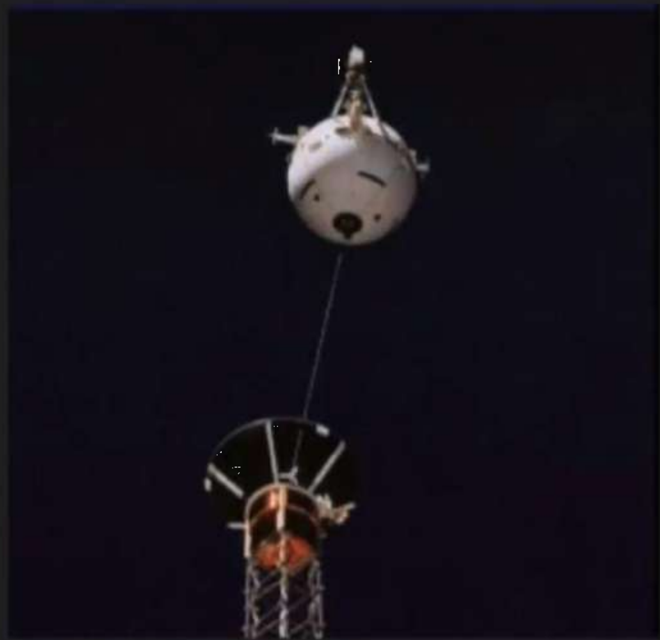
Electrodynamic Tethers - Applications

-Electrical Generators/Electrical Motors

-Tether Propulsion Systems

Specific Uses:

-Power Generation
-Electrodynamic Thrusters
-Altitude Stabilization
-Radiation Shielding
-Communication Antennae
-Low Gravity Laboratory
-Space Transfer Vehicle (STV) Launch
-etc.



Lorentz Force:

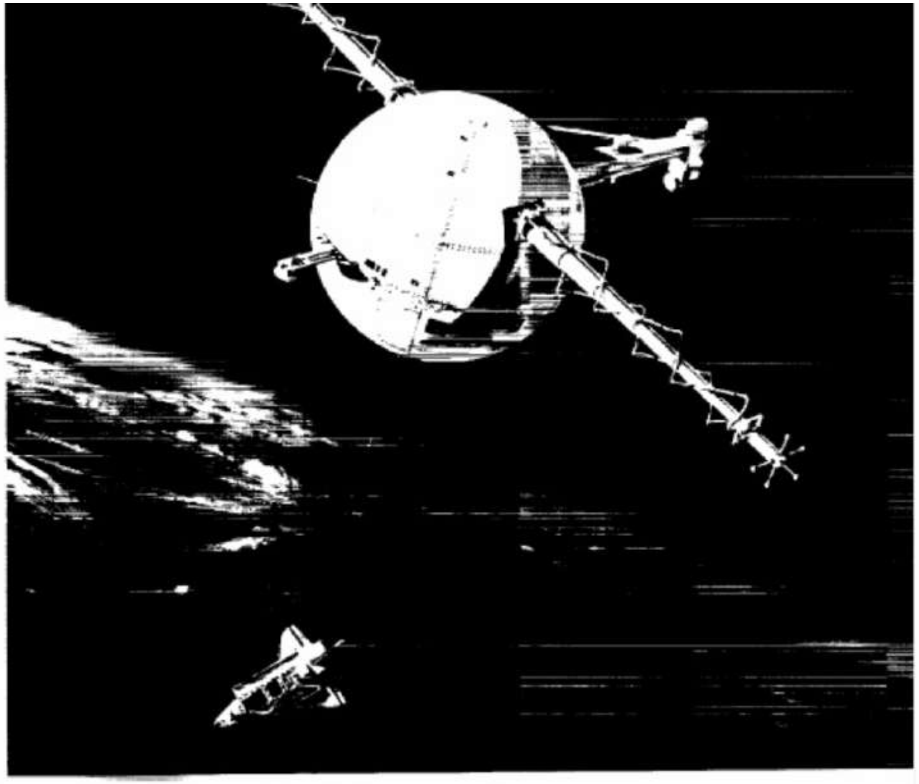
$$\vec{F} = \underbrace{q\vec{E}}_{\text{Electric force}} + \underbrace{q\vec{v} \, x \, \vec{B}}_{\text{Magnetic force}}$$

A Line To The Universe

The first Tethered Satellite System (TSS-1) will soon be launched aboard the Space Shuttle. Circling Earth at an altitude of 296 kilometers (km), the reusable tether system will be well within the tenuous, electrically charged layer of the atmosphere known as the ionosphere. There, a satellite attached to the orbiter by a thin conducting cord, or tether, will be reeled from the Shuttle payload bay. This will grant scientists experimental capabilities never before possible.

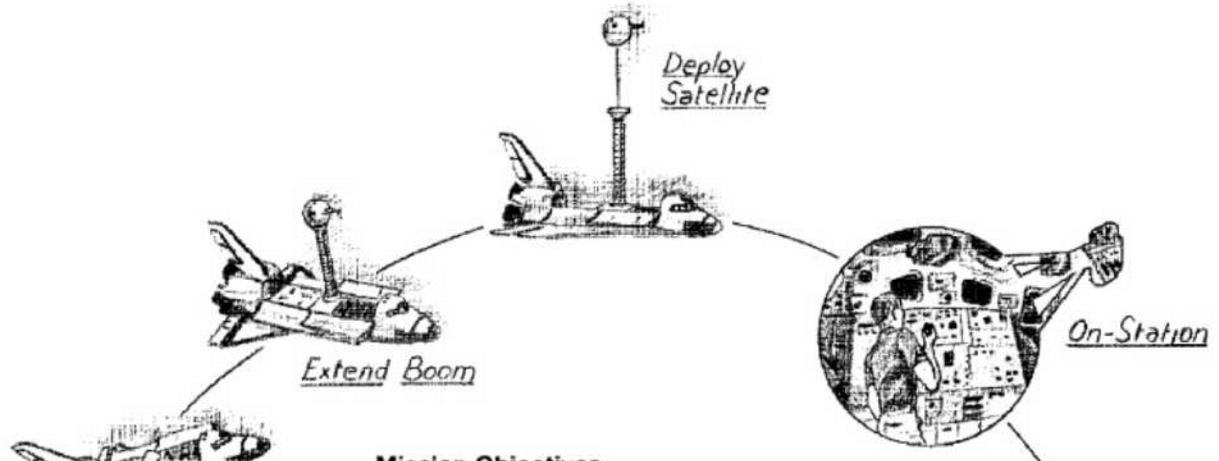
On this mission, the satellite will be deployed 20 km above the Shuttle. The conducting tether will generate high voltage and electrical currents as it moves through the ionosphere and allow scientists to examine the electrodynamics of a conducting tether system. These studies will not only increase our understanding of physical processes in the near-Earth space environment but will also help provide an explanation for events witnessed elsewhere in the solar system. In addition, the mission will explore the mechanical dynamics of tethered systems, providing information that will improve future missions and possibly lead to a variety of future tether applications.

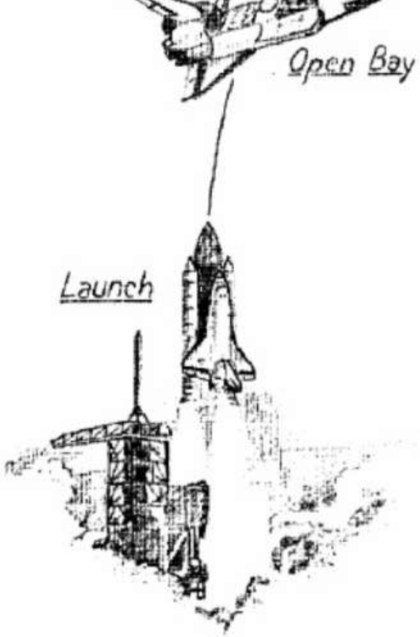
Tethered spacecraft can be deployed toward or away from Earth. Downward deployment (toward Earth) on future missions could place the satellite in regions of the atmosphere that have been difficult to study because they lie above the range of high-altitude balloons and below the minimum altitude of free-flying satellites. A series of Tethered Satellite System flights, exploring in both directions from the Shuttle, could gather data previously impossible to obtain. Each flight would allow scientists and engineers to conduct new experiments, explore phenomena discovered through previous missions, and develop new uses for tethers in space exploration.



Deployment of the Tethered Satellite System upward from the Shuttle on TSS-1 allows scientists to gather data on performance, while providing an excellent platform for a variety of plasma physics and electrodynamics investigations.

The Tethered Satellite System has the potential to be deployed toward the Earth. On such a future mission, large-scale investigations of previously inaccessible regions of the atmosphere could be performed.





Mission Objectives

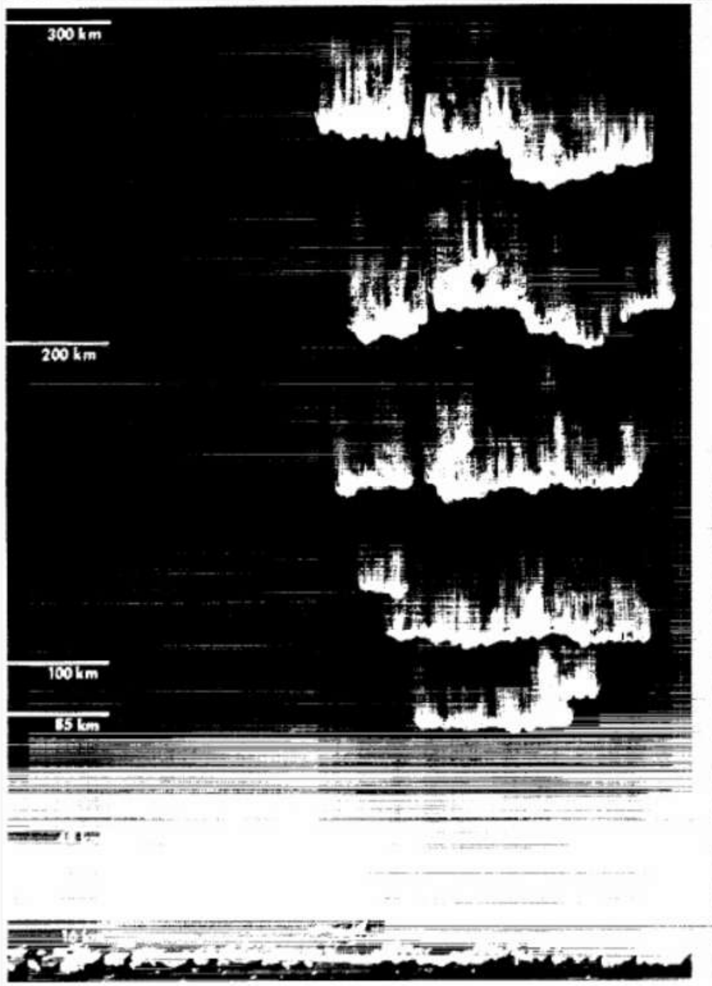
The era of space-age tethered operations moves toward reality with the launch of TSS-1. The primary objective of this mission is to demonstrate the technology of long tethered systems in space and to demonstrate, through scientific investigations, that such systems are useful for research.

Engineering Goals

Manipulating a satellite on a tether from the orbiter is a unique engineering challenge. Because gravity, centrifugal force, and atmospheric drag vary with altitude, each of the two bodies in a tethered system, one orbiting above the other, is subject to different influences. Consequently, the primary engineering goal of TSS-1 is to demonstrate that a satellite can be deployed, stabilized, and retrieved on a long tether in space and that an electrically conducting system can be operated successfully. Tether dynamics and control are not intuitive; while reeling out a satellite on a tether is somewhat analogous to flying a kite, the analogy breaks down when the environments in which the systems operate are compared. Unlike a kite in the atmosphere, the tethered satellite is in an electrically charged environment and is controlled by gravity gradient rather than aerodynamic forces. TSS-1 will improve our understanding of tether dynamics and allow scientists and engineers to develop more sophisticated tether control models for future tethered missions.

Science Goals

Speeding through the magnetized ionospheric plasma at almost 8 km per second, a 20-km long conducting tether should create a variety of very interesting plasma-electrodynamic phenomena. These are expected to provide a variety of unique experimental capabilities, including the ability to collect an electrical charge and drive a large current system within the ionosphere, to generate high voltages [on the order of 5 kilovolts (kV)] across the tether at full deployment, to control the satellite potential and the satellite's plasma sheath, and to generate low-frequency electrostatic and electromagnetic waves. It is believed that these capabilities can be used to conduct controlled experimental studies of phenomena and processes that occur naturally in plasmas throughout the solar system, including Earth's magnetosphere.



Layers of the Atmosphere

Regions of the Atmosphere

Earth's electrically neutral atmosphere is composed of four primary layers. The lowest layer, the one we live in on Earth's surface, is known as the troposphere and extends as high as 16 km above sea level. Extending from about 16 to 48 km is the stratosphere. Ninety-nine percent of the air in the atmosphere is located in these two regions. Above the stratosphere, from 48 to 85 km is the mesosphere. The uppermost layer is the thermosphere, which extends to approximately 1,000 km.

The upper thermosphere is also characterized by the presence of electrically charged gases, or plasma. This region, which extends from 85 to approximately 1,000 km, is also known as the ionosphere. The boundaries of the ionosphere vary according to solar activity. Overlapping the ionosphere is the magnetosphere, which extends from approximately 80 to 60,000 km on the side towards the Sun, and trails out more than 300,000 km away from the Sun. The magnetosphere is the region of space surrounding Earth in which the geomagnetic field plays a dominant role in the behavior of charged particles.

TSS-1 will allow scientists to study a variety of ionospheric processes. For example, it will generate large-scale electrical current loops in the ionosphere. These current loops may be similar to currents that occur in the polar regions of the atmosphere associated with auroras. Conducting tethers may also provide an alternate source of power for future spacecraft. This mission will help quantify the amount of electrical power that can be produced by conducting tethers.

The lower region of the thermosphere, from approximately 130 to 180 km, has been very difficult to explore. Satellites cannot orbit in this region because they would rapidly fall from orbit and burn up from atmospheric friction. Balloons cannot reach this altitude, and sounding rockets pass through the region too quickly to obtain more than a quick vertical profile of a particular spot. While TSS-1 will be deployed away from Earth, future missions can be deployed downward. These future Tethered Satellite System missions can spend days at these altitudes, gathering valuable data in a previously inaccessible region of our atmosphere.

the motor control assembly and a data acquisition and control assembly. The reel mechanism is capable of letting out the tether at 16 km per hour; during the TSS-1 mission, however, the tether will be reeled out at a much slower rate.

The Tether

The tether's length and electrical properties affect all aspects of tethered operations. With its satellite fully deployed, the TSS-1/orbiter combination is 100 times longer than any previous spacecraft, and when the tether's current is pulsed by electron accelerators, it becomes the longest and lowest frequency antenna ever placed in orbit. Also, for the first time, scientists can measure the charges collected by spacecraft with high electrical potentials. All these capabilities are directly related to the structure of the shoe lace-thick tether, a conducting cord designed to anchor a satellite miles above the orbiter.

The TSS-1 tether is 22-km long and is expected to develop a 5,000 volt (V) potential and carry a current of up to 1 ampere (A).

Manufactured for Martin-Marietta by the Cortland Cable Company of New York, the tether has a center of Nomex™ that is wrapped with copper wire which acts as the electrical conductor. The layer of wire is insulated with Teflon™, which is then covered with braided Kevlar™ 29 to give strength to the tether. The outer jacket of the tether is braided Nomex™ which protects the tether against the corrosive effects of atomic oxygen and mechanism-induced abrasion.

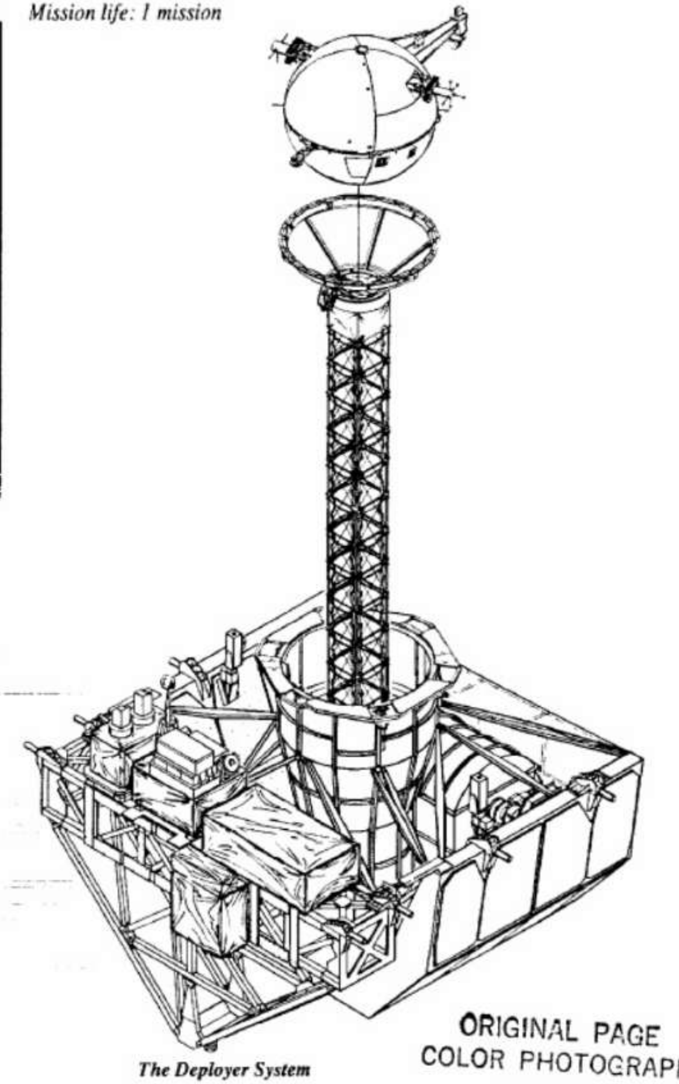
The different layers of the tether can be seen in this photograph.

TSS-1 Tether Characteristics

Diameter (outer): 2.54 mm
Deployed length: 20 km
Breakstrength: 1,780 N
Maximum allowable tension: 700 N
Maximum expected load: 53 N
Maximum allowable mass: 8.2 g/m
Temperature range: -100 to +125 °C
Electrical characteristics:
current (maximum) – 1 A at 10 kV
dc resistance – 0.12 ohms/m
nominal operating voltage - 5,000 Vdc
Maximum expected operational current: 500 to 750 mA
Mission life: 1 mission

Deployer System Characteristics

- *Deployer System*
  Total mass: 2,027 kg
  Thermal control: 4 coldplates, Multi-Layer Insulation (MLI), thermal tent covering pallet
  Power: 500 to 1,000 W (average); 1,500 W (peak)
  Data: 16 kbps (telemetry); 2 kbps (command)
- *Tether Reel Assembly*
  Capacity: 22-km conducting tether; 110-km nonconducting tether
- *Boom*
  Extended length: 12 m



The Deployer System

ORIGINAL PAGE
COLOR PHOTOGRAPH

place to place, especially in levels near the surface, where considerable changes

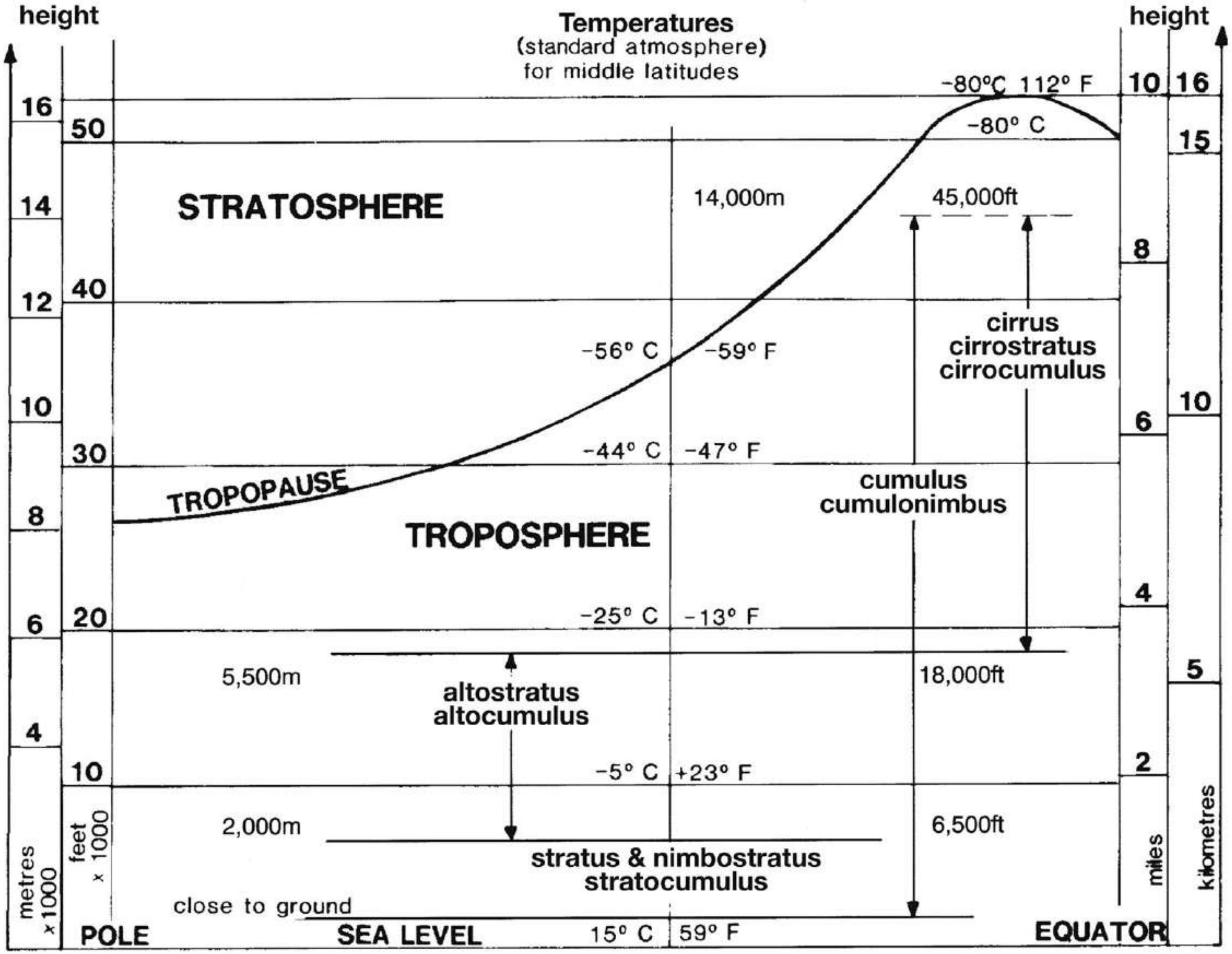
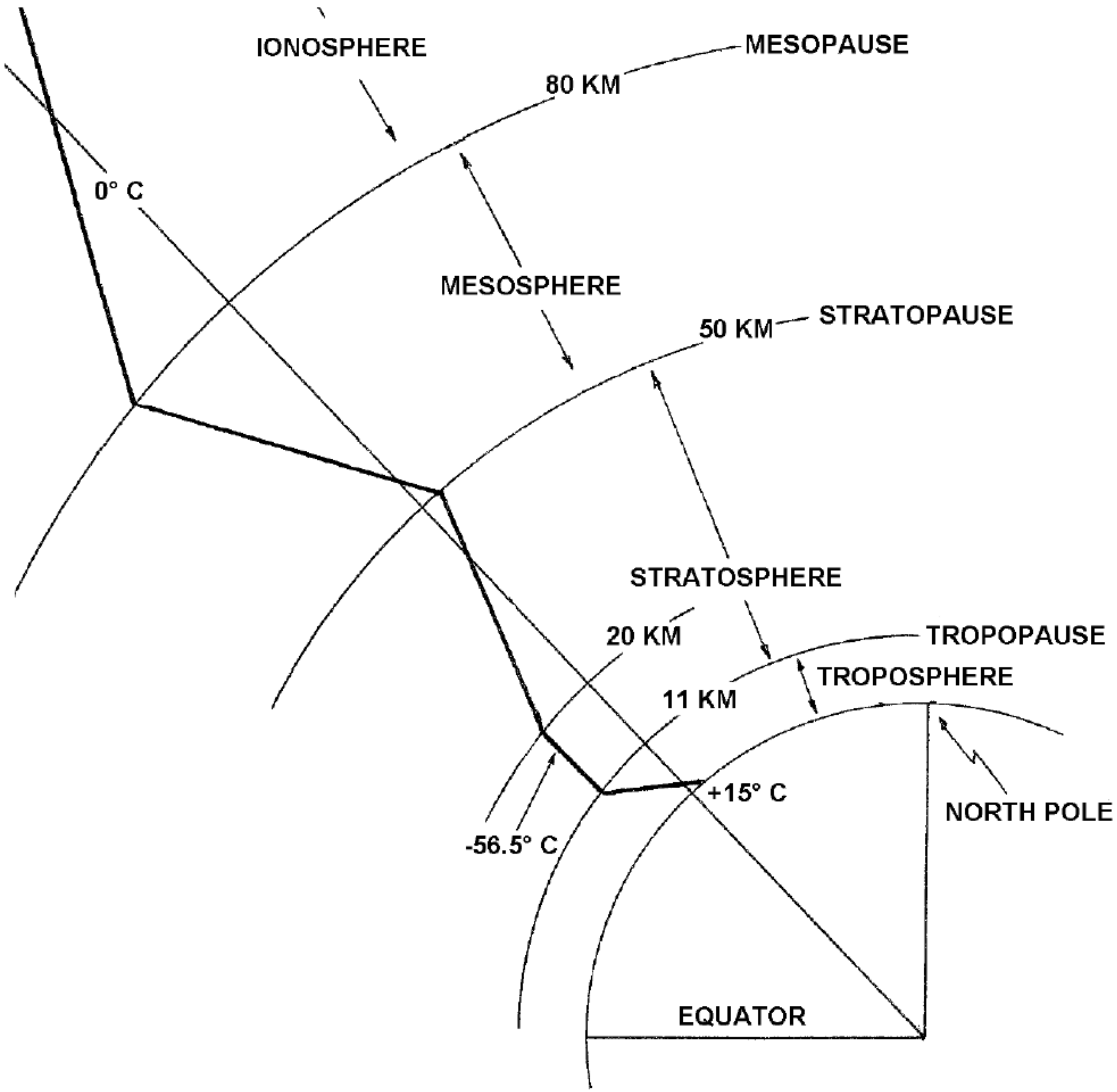
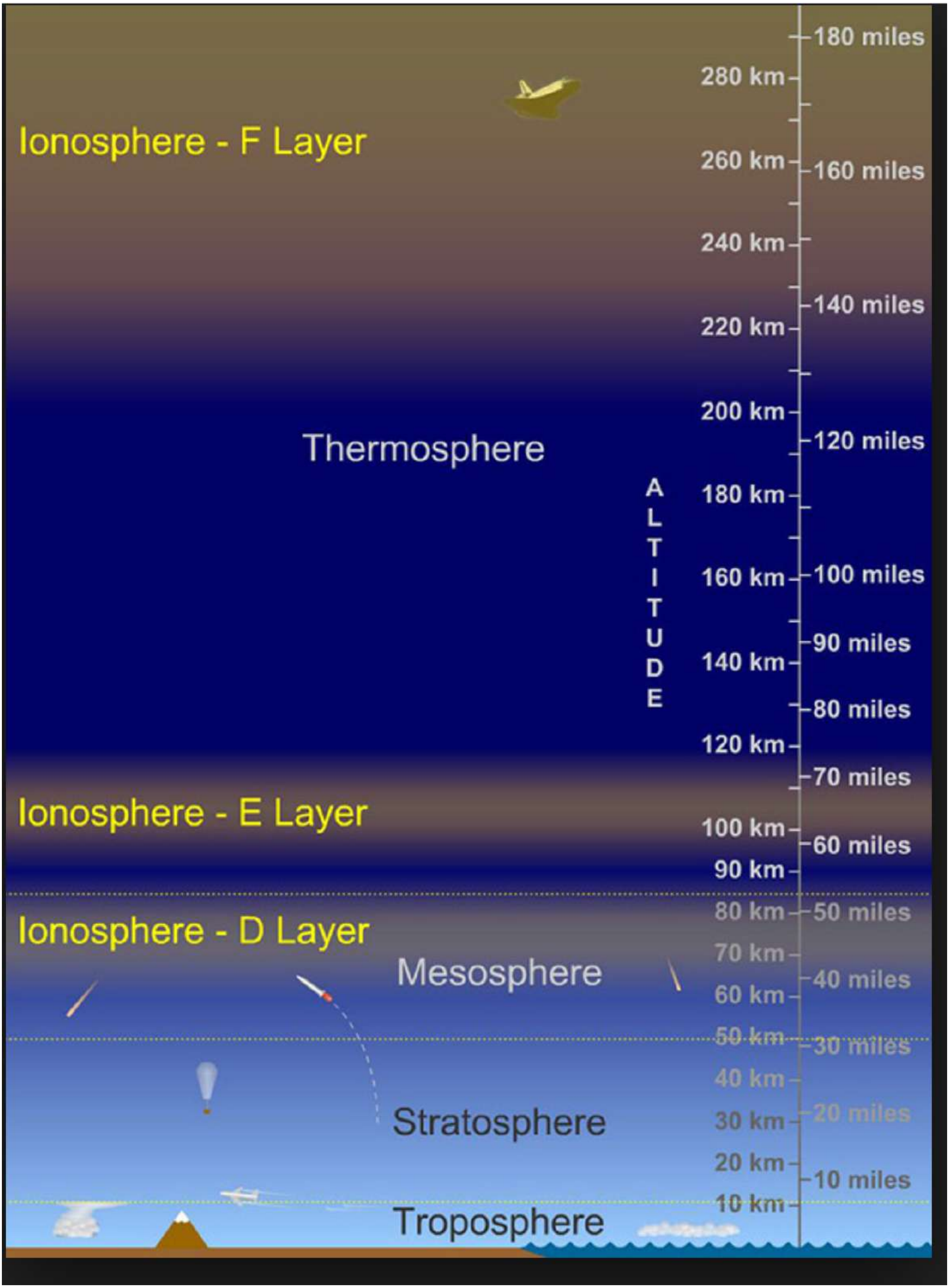


Fig 1.1

Note: Height equivalents are approximate

The Atmosphere





Ionosphere - F Layer
Thermosphere
Ionosphere - E Layer
Ionosphere - D Layer
Mesosphere
Stratosphere
Troposphere
ALTITUDE
280 km
260 km
240 km
220 km
200 km
180 km
160 km
140 km
120 km
100 km
90 km
80 km
70 km
60 km
50 km
40 km
30 km
20 km
10 km
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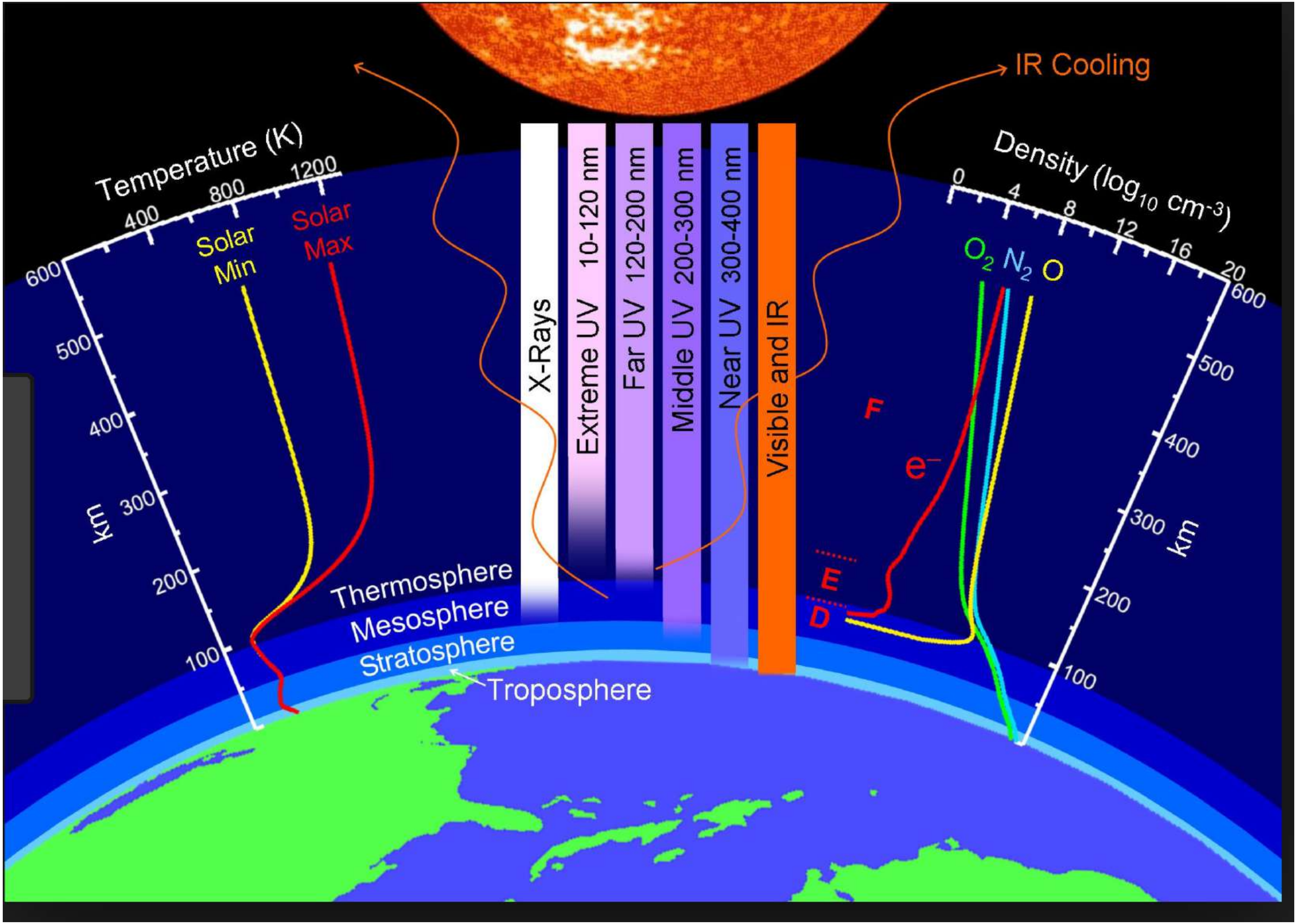
50 miles
40 miles
30 miles
20 miles
10 miles



IR Cooling
Temperature (K)
400
800
1200
Solar Min
Solar Max
600
500
400
300
200
100
km
X-Rays
Extreme UV 10-120 nm
Far UV 120-200 nm
Middle UV 200-300 nm
Near UV 300-400 nm
Visible and IR
Density (log_{10} cm^{-3})
0
4
8
12
16
20
O_2 N_2 O
F
e^-
E
D
Thermosphere
Mesosphere
Stratosphere
Troposphere

Upper Atmosphere

The Earth's atmosphere has four primary layers: the troposphere, stratosphere, mesosphere, and thermosphere. These layers protect our planet by absorbing harmful radiation.

Aeronomy of Ice in the Mesosphere (AIM)

NASA's Aeronomy of Ice in the Mesosphere (AIM) satellite can remotely sense night-shining clouds in the mesosphere. These noctilucent clouds are made of ice crystals that form over the summer poles at an altitude too high and a temperature too cold for water-vapor clouds.

Thermosphere
53–375 Miles

In the thermosphere, molecules of oxygen and nitrogen are bombarded by radiation and energetic particles from the Sun, causing the molecules to split into their component atoms and creating heat. The thermosphere increases in temperature with altitude because the atomic oxygen and nitrogen cannot radiate the heat from this absorption.

Mesosphere
31–53 Miles

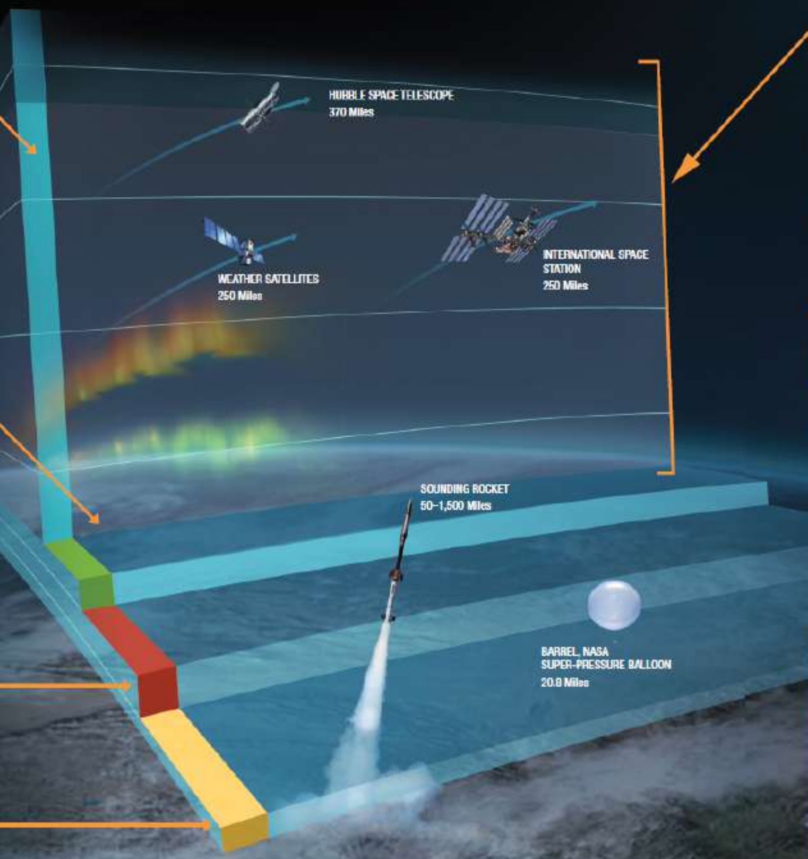
Studying the mesosphere is essential to understanding long-term changes in the Earth's atmosphere and how these changes affect climate. Since the mesosphere is responsive to small changes in atmospheric chemistry and composition, it could provide clues for scientists, such as how added greenhouse gases may contribute to a change in temperature or water composition in the atmosphere.

Stratosphere
10–31 Miles

The ozone layer lies within the stratosphere and absorbs ultraviolet radiation from the Sun.

Troposphere
0–10 Miles

The troposphere is the layer of the Earth's atmosphere where all human activity takes place.



Ionosphere

The ionosphere is a layer of plasma formed by the ionization of atomic oxygen and nitrogen by highly energetic ultraviolet and x-ray solar radiation. The ionosphere extends from the middle of the mesosphere up to the magnetosphere. This layer cycles daily as the daytime exposure to solar radiation causes the ionization of the atoms that can extend down as far as the mesosphere. However, these upper atmospheric layers are still mostly neutral, with only one in a million particles becoming charged daily. At night, the ionosphere mostly collapses as the Sun's radiation ceases to interact with the atoms in the thermosphere. There are still small amounts of charged atoms caused by cosmic radiation.

Rockets, Balloons, and Satellites

NASA scientists use balloons to collect *in-situ* measurements in the atmosphere. However, the mesosphere and thermosphere are too high for balloons to reach, so scientists use instruments on sounding rockets and satellites to gather more detailed measurements of the upper atmosphere.

Communication

A unique property of the ionosphere is that it can refract short-wave radio waves, enabling communication over great distances by "bouncing" signals off this ionized atmospheric layer. Variability of the ionosphere can interrupt satellite communication, such as errors in GPS signals for commercial air navigation. During solar storms, this layer can even shut down communication between ground stations and satellites.

Noctilucent Clouds in the Mesosphere

Evidence of change in the behavior of noctilucent clouds has been observed by the AIM mission. Recent data show dramatically lower ice content, leading scientists to speculate about changes in weather conditions and pole-to-pole atmospheric circulation.

BARREL

The Balloon Array for Radiation-belt Relativistic Electron Losses (BARREL) is a balloon-based mission to augment the measurements of NASA's RBSP spacecraft. BARREL seeks to measure the precipitation of relativistic electrons from the radiation belts during two multi-balloon campaigns operated in the Southern Hemisphere.